SEAS AT RISK

Background paper, abstracts
and conference proceedings
Seas At Risk annual conference
Brussels 21 October 2009

Towards sustainable European fisheries:

The double challenge of restructuring and reducing the fishing fleet

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This conference was supported by the European Commission (DGEnvironment) and the Pew Environment Group´s European Marine Programme. The objective of the European Marine Programme is to support the European Union in ending global overfishing and reducing destruction of the world´s oceans.

Introduction

Seas At Risk organised the conference "Towards sustainable European fisheries – The double challenge of restructuring and reducing the fishing fleet". The purpose of the conference was to:

- Contribute to the process of the CFP reform by addressing the issue of capacity reduction and fleet restructuring;
- Identify economic, social and environmental aspects of a sustainable fleet;
- Discuss management tools that will be effective in delivering such a fleet.

A background paper was provided to the participants ahead of the conference. This paper provided the participants with some thought-provoking background for the conference, and raised several issues and questions for the participants to think about in preparation of the parallel workshops that were held during the conference.

After keynote addresses by Poul Degnbol, Adviser on scientific matters of DGMare on behalf of the Commission and Axel Wenblad, Director General of the Swedish Board of Fisheries on behalf of the Swedish EU presidency, and a presentation by the reputed fisheries scientist Sidney Holt "setting the scene", the conference engaged participants in three sessions. The first session addressed the question of what makes a fleet sustainable; the second session addressed the issue of capacity reduction and fleet restructuring, and the last session consisted of three parallel workshops where the issues raised during the first two sessions were further discussed.

The conference was attended by a broad range of participants from policy makers from the European Commission and national government officials to decision-makers, representatives of the fishing industry and environmental NGOs, and scientists.

This report includes the background paper, abstracts and biographies of the speakers and the proceedings of the conference, summarizing the presentations and subsequent questions and answers, as well as the workshop discussions and conference conclusions. Finally, the annexes contain the conference programme and the participant list. Speakers' presentations may be accessed via the Seas At Risk website: http://www. seas-at-risk.org

Seas At Risk wishes to acknowledge and thank all participants for their contributions to the discussion and debate about the double challenge of restructuring and reducing the fishing fleet in the context of the reform of the Common Fisheries Policy.

Background paper

Introduction

This paper provides a background for Seas at Risk's conference: "Towards sustainable European fisheries - The double challenge of restructuring and reducing the fishing fleet", which will take place on October 21st in Brussels. The purpose of the organisers is to:

1 Contribute to the process of the CFP reform by addressing the issue of capacity reduction and fleet restructuring;

2 Identify economic, social and environmental aspects of a sustainable fleet;

3 Discuss management tools that will be effective in delivering such a fleet.

There are three sections to this background document.

First, we analyse Europe's past and current efforts to control its fishing capacity. We then discuss the management tools used to reduce overcapacity; and third, we review the three dimensions, environmental, economic and social, which need to be managed together in order to match fishing capacity to fishing opportunities and obtain sustainable fisheries.

Capacity reduction and fleet restructuring are complex issues, which merit discussion by a broad audience. The conference programme therefore includes parallel workshops to discuss several themes more thoroughly. Throughout this background document you can find issues and questions we hope you will consider as part of your preparation for these workshops.

1. Europe's past and current over-capacity problems

The Green Paper on the Reform of the Common Fisheries Policy published in 2009[1] identifies the persisting and "*deep-rooted problem of fleet-over-capacity*" as a key structural failing of the CFP, with by 2008, a "*fleet capable of catching between two and three times the European fisheries maximum sustainable yield*".[2]

Even though the 2002 CFP reform discontinued the use of public aid to construct new vessels and introduced a structural policy "*more coherent with CFP objectives*", according to the Green Paper, by 2009 "*most of Europe's fishing fleets are either running losses or returning low profits*" due to chronic overcapacity.

The far reaching consequences of fleet over-capacity have been recognised by the European Commission, who in the Green Paper[1] establish linkages between overcapacity, low economic resilience, discards and overfishing. The 2020 vision for the new CFP brings together the economic, environmental and social dimensions of fishing capacity management, including the use of more environmentally friendly fishing methods.

1.1 Capacity and control programmes

Between 1983 and 2009, a succession of publicly-funded decommissioning programmes delivered little effective reduction in fishing mortality.

1.1.1 MAGPs – to 2002

The Multi-Annual Guidance Programmes (MAGP), between 1983 and 2002, aimed to reduce fishing effort, either temporarily or permanently. They relied on voluntary applications and, until the last programme, did not set guidelines by fishery.

Fleet capacity was not clearly linked to fishing effort or to fishing mortality until MAGPIV, and Pascoe et al (2002[3]) noted that even though MAGP III achieved a 29 per cent reduction in Danish fleet capacity in Gross Tonnage (GRT/GT), and a 22 per cent reduction in Dutch fleet engine power over the period 1988 to 1993 there was no clear effect on fishing effort and fishing mortality over the same period, and therefore no improvement in economic performance.

Between 1997 and 2001 included, MAGP IV[4] called for reductions in fishing effort of 30% on stocks risking collapse and of 20% on overfished stocks. But, in an attempt to minimise short term socio-economic impacts, no effort or capacity reduction were required for fully exploited or insufficiently known stocks. For the same reason, MAGPIV made it possible to reduce fishing activity (days at sea) instead of capacity for vessels using active gears such as trawls or purse seines, if the activity was identified by fishery and could be adequately monitored and controlled. Germany, France, the Netherlands, Ireland and the United Kingdom chose the effort control option and kept overcapacity for some of their fleet segments. Thus, although compliance with decommissioning targets was good, the targets themselves were meaningless for the long-term sustainability of the fleet.

Furthermore, assistance for vessel construction was still possible until the end of MAGP IV (funding in 2002, projects until 2004) and by 2002, the European Commission deplored that "*recent reduction targets have been very modest and increasing fleet efficiency and dwindling stocks have meant that, in some segments, the fleet still remains much too large for the size of stocks it is targeting*".[5]

1.1.2 Entry-exit regime - from 2003

The Entry-exit regime of fleet management initiated on 1 January 2003[6] introduced stricter reporting and capacity control rules. Capacity decommissioned with public aid had to be permanently withdrawn, and capacity built with public aid could only replace 135% equivalent of previous capacity. This ensured that capacity levels (see[7]) could not increase above the 1 January 2003 level in any Member state.

[1] COM(2009)163 final, 22.4.2009. Reform of the Common Fisheries Policy - Green Paper
[2] See http://ec.europa.eu/fisheries/press_corner/press_releases/2008/com08_60_en.htm updated 17.09.2008
[3] Pascoe, Tingley and Mardle, 2002. Appraisal of alternative policy instruments to regulate fishing capacity, Cemare ER0102/6 Report to Defra, 119pp. https://statistics.defra.gov.uk/esg/reports/capman/finalrep.pdf
[4] Council Decision 97/413/EC of 26.6.1997 (O.J. L175 of 3.7.97)
[5] COM(2002) 190 final 2002/0115 (CNS), 28.5.2002. Proposal for a Council Regulation establishing an emergency Community measure for scrapping fishing vessels
[6] See Article 13 of Council Regulation 2371/2002 and Articles 6 and 7 of Commission Regulation 1438/2003 http://ec.europa.eu/fisheries/fleet/index.cfm?method=RES1.Rules

At the same time, the Commission introduced multi-annual fisheries management plans and "*an emergency Community measure for scrapping fishing vessels*" between 2003 and 2006 to encourage the vessel owners affected to "*decommission quickly*"[28]. At this stage, the Commission estimated that €663 million had been dedicated to capacity decommissioning between 2000 and 2006 and that another €271,6 million would be required between 2003 and 2006.

The proposal was also followed by an Action Plan to counter the social, economic and regional consequences of the restructuring of the EU fishing industry[8] and to assist those likely to be severely affected. But decommissioning was still voluntary and did not reduce the capacity of the more mobile or larger vessels operating in more than one fishery.

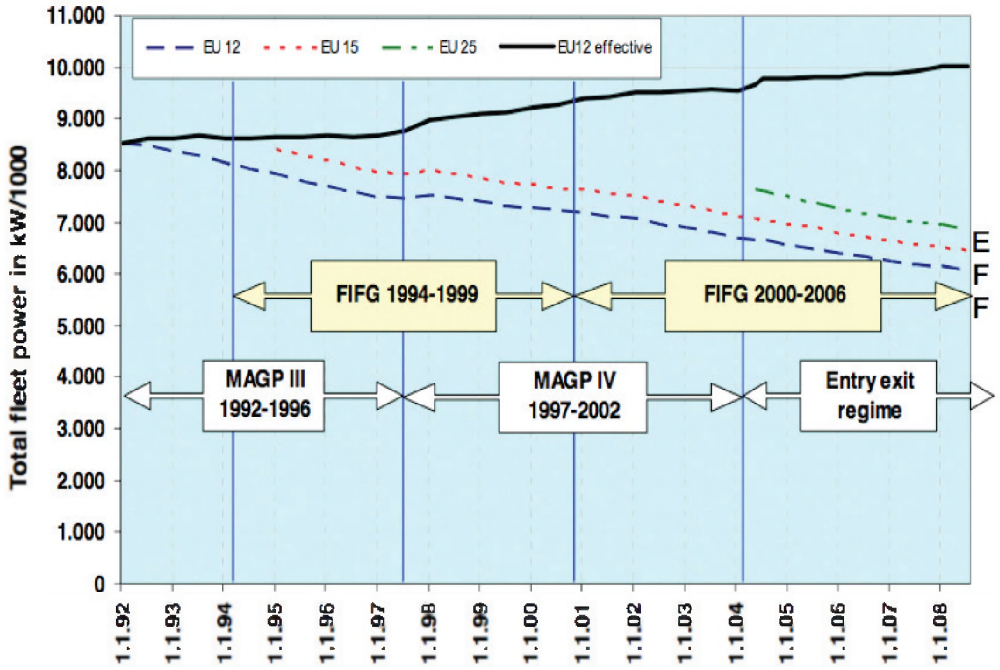
In its 2008 mid-term review of the CFP the Commission admitted that there had been no "*drastic*" decommissioning, and instead the fishing fleet "*continued its slow but steady reduction at an annual rate of between two percent and three percent and that this had been the trend for the last 16 years*".[9]

This is illustrated in Figure 2 (from EC, 2008[9]) where the black line shows how the actual fishing capacity has increased assuming an annual "creep" in technological fishing efficiency of 3% since 1992.

The situation also suffered from a lack of political will, which was obvious in 2007 when the Council of Fisheries Ministers adopted an amendment that allowed Member States to replace 4 percent of the capacity scrapped with public aid from 1January 2007, and also to recover 1% of the capacity scrapped with aid since 1 January 2003 by adjusting previous reference levels.

In its analysis[10], the Commission concludes that "*excessive subsidising, ineffective controls, technological development and also an insufficient political will*" [...] have "*led to a preference for short-term solutions over long-term improvements. The long-term ecological sustainability of fisheries has been undermined to such an extent that the economic and social sustainability of the European fisheries sector is now compromised*."

Figure 1: Trends in European fishing fleet capacity (kW) between 1992 and 2008 (from EC, 2008)



[7] See http://ec.europa.eu/fisheries/fleet/index.cfm and http://ec.europa.eu/fisheries/fleet/index.cfm?method=FM_Reporting.menu

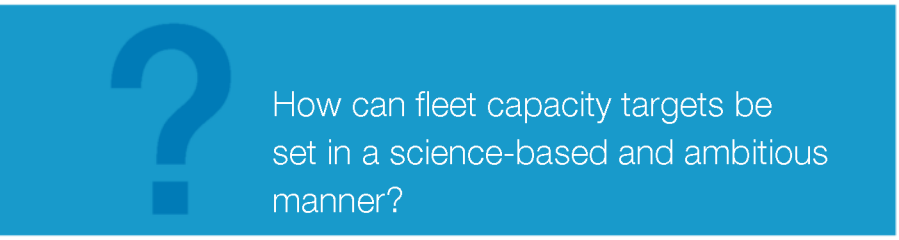
[8] COM(2002) 600 final, 6.11.2002.

[9] EC, 2008. Commission Working Paper: Reflections on further reform of the Common Fisheries Policy. September 2008, from http://ec.europa.eu/fisheries/press_corner/press_releases/2008/com08_60_en.htm

[10] Commission Regulation (EC) No 1277/2007 of 29 October 2007 amending Regulation (EC) No 1438/2003 laying down implementing rules on the Community Fleet Policy as defined in Chapter III of Council Regulation (EC) No 2371/2002, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32007R1277:EN:NOT

1.2 Over-capacity indicators

By 2008, it had become obvious that the management of fleet capacity did not result in a decrease in fishing mortality for most fisheries.



In order to address that problem, the Commission's Scientific, Technical and Economic Committee for Fisheries (STECF)[11] proposed a set of new indicators to monitor fleet performance directly.

The eight indicators (see Box 1) cover biological (2, 3, 4), economic (5,6) and social (7,8) sustainability - by fishery (single-species stock) and by fleet segment, and the fleet uptake of its fishing opportunities (technical indicator 1). The Guidelines also provide a green/red light system to combine the different indicator categories.

1. Ratio between average days at sea and maximum days at sea observed
2. Ratio of current fishing mortality (Fsq) to target fishing mortality (Fmsy) for stocks exploited (Fsq/Fmsy)
3. Ratio of catch weight to estimated stock exploited biomass (fleet segment TAC share)
4. Catch per Unit Effort (CPUE) measured in catch weight per days at sea
5. Return on investment (ROI)
6. Ratio of break-even to current revenue (BER/TR)
7. Gross value added (GVA) of the activity of the fleet segment
8. Average wage per Full-time equivalent (FTE)

Box 1: Indicators for the balance between capacity and fishing opportunities (2008 Guidelines)

The new indicators were used for the first time by some Member States in their reports of fishing fleet activities in 2007.[12] Most Member States argued (and the Commission recognised in its annual summary) that time had been too short to fully use the new Guidelines.

The computation, interpretation and validity of the new indicators and their results need further clarification and standard procedures, and in some cases, the collection of new data through the new framework for fisheries data collection.[13] It will take time for the new reporting methodology to be fully validated and operational, and before its use can be made binding. It will be important to make sure that Member States report every fleet segment active in each quota-managed fishery so that latent capacity is not any longer hidden into multiple fisheries or developing unnoticed in the small-scale fleet.[14]

Nevertheless, the first reports show[15] that most fleet segments are in the red economically because of lack of fish, which has been the general consensus for some time. The new indicators have without a doubt the potential to inform a fleet capacity management plan (next section and Lindebo, 2007 STECF Note for the file[16]).

[11] See Guidelines for an improved analysis of the balance between fishing capacity and fishing opportunities http://ec.europa.eu/fisheries/press_corner/calls/2009_03/annex_5_guidelines_en.pdf and https://stecf.jrc.ec.europa.eu/home
[12] http://ec.europa.eu/fisheries/fleet/index.cfm?method=FM_Reporting.AnnualReport
[13] Council Regulation (EC) No 199/2008, 25.02.08, concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy
[14] Kurien, J., 2006. Overcapacity, overfishing and subsidies: How do they relate to small scale fisheries? Paper presented at the 8th Pacific Rim Fisheries Conference in Hanoi, March 2006, 7pp.
[15] See Lutchman et al. 2009. Towards a reform of the Common Fisheries Policy in 2012 – A CFP Health Check. IEEP Report pp. 80pp.
[16] http://fishnet.jrc.it/c/document_library/get_file?p_l_id=1807&folderId=2518&name=DLFE-23.doc&targetExtension=txt

2. Fishing fleet capacity management tools

Fleet capacity management instruments can be split into rights-based and non-rights based such as restricted licences, effort limitation, spatial closures, and gear restrictions. Whatever types of instruments are used to manage capacity, an overall plan is needed at European level (and international level for some fisheries), which can be implemented at national and local levels.

2.1 FAO Plan of Action for the Management of Fishing Capacity

The FAO Capacity Management Guidelines (FAO, 2008[17]) to implement an International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity) give the most important aspects needed for a European or Member State level Plan of Action (see Box 2).

- National definition of fishing capacity in coordination with adjacent states
- Stakeholder (fishery and non-fishery) engagement at every stage
- Capacity assessment (current and target), measuring and monitoring
- Choice of management instrument(s) to achieve target capacity, for each fishery
- Identification of transitional and institutional issues
- Fishing capacity management research and skills training
- Review of subsidies and economic incentives building up fishing capacity
- Collaboration with RFMO and prevention of capacity transfer to International fisheries

Box 2: Key actions when developing and implementing a NPOA-Capacity (from FAO, 2008)

A clear Implementation Strategy for national and local levels could be modelled on the Asia-Pacific Fishery Commission (APFIC[18]) strategy for example (Box 3), and in particular the elaboration of a capacity management plan (step 3), based on a clear assessment of the fishing capacity in each fishery (step 1), with meaningful targets (step 2) using adapted management tools (step 4) such that capacity is not transferred but removed permanently.

Managing Fishing Capacity

Key steps:

1. Carry out assessments of fishing capacity:
   - Based on improved registers of fishing vessels and/or
   - Based on detailed regular census of fishing vessels and fishing effort
2. Initiate a programme for capacity management:
   - Start with a small number of major fisheries e.g. the trawl fishery
   - Set meaningful targets for change – reduction where overfishing occurs
3. Develop a NPOA for capacity management;
   - Based on a consultative process involving inter-agency collaboration and consensus
   - building
4. Introduce management measures (taking into account socio-economic conditions):
   - Include rights-based measures wherever feasible
   - Ensure that excess fishing capacity is removed, not transferred
5. Gain support from Regional/International organisation:
   - Develop regional co-operation to harmonise initiatives

Box 3: Capacity Management Implementation Strategy in the Asia Region (from APFIC, 2007)

For a Plan of Action to make a difference, it will also have to reduce fleet segments with the highest environmental impacts first.

- Is there a need for legally binding fleet reduction and restructuring targets?
- Should targets for changes in fleet structure be set on a fishery-by-fishery basis, on a region-by region, or on a Member State by Member State?
- How to ensure effective implementation?

?

[17] FAO (2008). Fisheries management 3. Managing fishing capacity. FAO Technical Guidelines for Responsible Fisheries, vol. 4 (Suppl. 3) pp. 104p.

[18] APFIC (2007). Managing fishing capacity and IUU fishing in Asia. RAP PUBLICATION (2007) pp. 46p.

2.2 Rights-based management systems

For the FAO "*overcapacity and overfishing (typically associated with overcapacity) are really symptoms of the same underlying management problem: the absence of well-defined property or use rights*".[19] The World Bank and FAO (200913) identify the first and most critical fisheries reform around the world to be an effective removal of the open access.

The term Rights-based Management (RBM) covers "*any system of allocating fishing rights to fishermen, fishing vessels, enterprises, co-operatives or fishing communities*", and many types[20] are currently used in European fisheries. The rights are essentially economic instruments designed to give fishing businesses more control over their investment and running costs, by allocating them a share of the resource to exploit. RBM systems can be scored for their economic value using the four key attributes of Exclusivity, Validity, Security and Transferability (MRAG et al, 2009).[21]

The FAO Fishing capacity management Guidelines[2] splits RBM systems into two groups. Those where rights are tradable and / or transferable such as ITQs and TURFs, provide incentives for vessel owners to adjust capacity. By opposition, non-transferable licences or quota are "incentive-blocking" (Box 4).

Incentive-adjusting programmes
Group fishing rights; Territorial use rights; Individual transferable quotas; Taxes, royalties, rent collection and management cost recovery

Incentive-blocking programmes
Limited entry; Buyback programmes; Gear and vessel restrictions; Aggregate catch quotas; Non-transferable vessel catch limits; Individual effort quotas

Box 4: Capacity management programmes incentives (from FAO 2008, Appendix 3)

After a public consultation on the use of rights-based management tools for fisheries in 2007[22] that attracted wide debates within European, Member States and sea users' institutions, the Commission puts forward a wider use of transferable fishing rights in the Green Paper (Box 5)[1].

"Use of market instruments such as transferable rights to fishing may be a more efficient and less expensive way to reduce overcapacity, and one for which the industry has to take more responsibility. Several Member States have taken steps in recent years towards using such instruments. This has generally led to more rational investment decisions and to reductions in capacity, as the operators adapt their fleet to their fishing rights in order to achieve economic efficiency. Such systems can be complemented with proper safeguard clauses to avoid excessive concentration of ownership or negative effects on smaller-scale fisheries and coastal communities."

Box 5: Green Paper consultation on transferable rights

It is important to remember that tradable fishing permits still have unfulfilled theoretical expectations regarding 1) their positive effect on the resource conservation and 2) the trade off they force between efficiency of the larger vessels and equity towards small-scale operators (Tietenberg, 2002).[23]

The legitimacy of "privately owned" fishing rights given away to fishing companies is still very much contested among resource economists. Bromley (2009[24]) notes that fisheries resources are a public good, for which fishers must pay, and that fishers only own (i.e. are free to sell) the fish they land once the management agency has checked that the fish has been caught within the rules. He also notes that contrary to farming, fishing has relatively low input costs, and therefore naturally attracts new capacity that can only be controlled if the proper rent is collected annually in exchange for the fishing right.

Grafton et al, 2008[25] also note that well-defined individual and community user rights are necessary for better fisheries governance, but that they are rarely defined in terms of ecosystem outcomes. Therefore additional provisions need to be introduced to fully align private with public incentives, such as gear bans to protect non-target species.

[22] COM(2007) 73 final, 26.2.2007. On rights-based management tools in fisheries http://ec.europa.eu/fisheries/cfp/governance/consultations/consultation_260207_en.htm
[23] Tietenberg,T. (2002) in Orstrom et al eds. Op. cit.: 223.
[24] Bromley, D. (2009). Abdicating Responsibility: The deceits of fisheries policy. Fisheries (2009) vol. 34 (6) pp. 280-290 and response.
[25] Grafton et al. Positioning fisheries in a changing world. Marine Policy (2008) vol. 32 (4) pp. 630-634

- Can transferable rights be designed to deliver environmentally, socially, and economically sustainable fleet, and how?
- Are RBM tools adequate for all fisheries and fleet segments?

2.3 Non Rights-Based management tools

In addition to various types of RBM, the European fisheries structural policy has relied on structural funds – currently the European Fisheries Fund (EFF) – to build, modernise and decommission vessels, to lower the ecosystem impacts of fishing gear, and most recently to make vessels more energy efficient.

2.3.1 Measures supported by the European Fisheries Fund

The European Fisheries Fund (EFF) Priority Axis 1 is dedicated to the "*Adjustment of the Community fishing fleet to available resources*". It has been programmed to use up to 37% of the total EFF budget by some Member States[26] to part-finance the measures shown in Box 6.

All measures that concern fleet capacity have the potential to interfere with the private sector operators' own economic contributions to capacity reduction, and therefore fall into the FAO "incentive-blocking" category. We also note that public funds are still available to part-finance new capacity (for young fishermen).

- Aid for permanent cessation as part of fishing effort adjustment plan or national fleet exit plan
- Aid for forced temporary cessation
- Aid for investments on board fishing vessels (such as more selective gear, fuel efficiency)
- Aid for small-scale coastal fishing (same as above and towards local management plans)
- Socio-economic compensation for temporary or permanent exit out of fishery
- Aid for young fishermen to - under certain conditions - co-finance a premium for the first-time acquisition (partial or total) of a vessel.

Box 6: Eligible measures under EFF Priority Axis 1

A recent study estimated that, for European fisheries, subsidies were equivalent to 31% of the value of landed catch (excluding research and other "good subsidies", see Sumaila and Pauly, 2007[27]). The perverse role played by subsidies in the build up of excessive fishing capacity is well documented and recognised by the Commission in its mid-term review of the CFP.[28] Thus a reform of the European Fisheries Fund established for the period 2007-2013[29] to fully reform the CFP, and the synchronisation of its funding programmes with the policy reform calendar, will be fundamental.

It will be important to ensure the coherence of all structural measures, including a termination of financial support to modernise the larger vessels and their on-board catching and processing equipment, or relief for temporary cessation of fishing (for vessels operating in European and in distant waters), emergency fuel aid, or any other public aid programmes that either interfere with the private sector's ability to develop to a sustainable level, or temporarily support fishing activities and excessive capacity that are otherwise unprofitable.

A new model for the EFF could be inspired by the government-established State of California Fisheries Fund (CFF[30]), which has been augmented by charitable private and NGO contributions, to make "*low-interest loans to fishermen and communities, to invest in innovative and sustainable fishing practices and business models*".

2.3.2 Decommissioning – buyback programmes

There is a consensus that government-funded vessel decommissioning programmes have been "*mostly ineffective*" in European waters (e.g. Baltic 2020, 2009[31]) and around the world.[32]

[26] From http://ec.europa.eu/fisheries/cfp/structural_measures/axis_1_en.htm
[27] Sumaila, R. and D. Pauly eds. 2007. Catching more bait:A bottom-up re-estimation of global fisheries subsidies (2 version), UBC Fisheries Research Centre report,14(6) 121pp.
[28] EC, 2008. Commission Working Paper: Reflections on further reform of the Common Fisheries Policy. September 2008, from http://ec.europa.eu/fisheries/press_corner/press_releases/2008/com08_60_en.htm
[29] http://ec.europa.eu/fisheries/cfp/structural_measures/arrangements_2007_2013_en.htm
[30] http://www.californiafisheriesfund.org/about.html
[31] Baltic2020, 2009 "Best practices" for fisheries management from http://www.balticsea2020.org/
[32] Curtis, R. and D. Squires, eds., 2007. Fisheries buybacks, Wiley-Blackwell.

Indeed, the semi-continuous flow of European public decommissioning aid under the MAGPs and in the three following years to 2006 appear to be the worst possible way, "*promoting over-investment and undermining government credibility*" (OECD, 2009[33]).

The Green Paper1 mentions a "*one-off scrapping fund*". A one-off measure is recommended by the OECD as a potentially useful transitional measure (Box 7), provided it is embedded in a rigorously designed fit-for-purpose fleet management programme and is implemented in a transparent and accountable manner (see Design and implementation Guidelines, OECD 2009).

The OECD study reviews a large number of case studies, including examples for the small-scale sector in Norway, France and Korea, which illustrate the complexity of the task and importance to have a fishery by fishery approach.

"Decommissioning programmes have been demonstrated to be a useful policy tool, but only in certain circumstances. They can accelerate the transition to a rationalised fishery managed on the basis of stronger use and access rights (based on output or input parameters) and improved ecosystem health. As part of a package of transitional assistance and management changes, they can provide a window of opportunity to help transform the nature of a fishery from one characterised by non-cooperative behaviour to one in which incentives are well-aligned and cooperation is the rational outcome of interactions between fishers."

Box 7: Main OECD conclusions on Best Practices for decommissioning schemes (2009)

An important aspect of Best Practice implementation concerns the "beneficiary pays principle", and the study finds that "*a combination of industry and public funding improves the incentives for co-operative management of the fishery as the remaining fishers have an stronger stake in the future of the fishery, particularly if there is sound fisheries management in place*". Given the natural tendency of fishing capacity to grow, it is therefore important to manage capacity with the fishers remaining in the fishery and ensure that they can cover the programme costs.

From an environmental sustainability point of view, the buyout of gear with high ecosystem impacts can help accelerate a fleet conversion to gear with less impact. This was used by the Italian government to eliminate drift nets in the Italian tuna and swordfish, ahead of the 2002 European driftnet (longer than 2.5km) ban (Curtis and Squires, 2007).

The OECD study (2009) focuses on the most capacity that can be taken out, but the example of United States Pacific Groundfish Fishery, which will be presented at the Conference, shows how ecosystem impacts can be reduced by taking out specific activities and gear types by targeting vessels active in specific sea areas of high biodiversity, decommissioned in this case through an NGO-funded permit buyout.

[33] OECD, 2009. Reducing fishing capacity. Best practices for decommissioning schemes. 120p.

3. Sustainable Fleet capacity

In the Green Paper, the Commission notes that "*Ecological sustainability is therefore a basic premise for the economic and social future of European fisheries*".

3.1 Environmental sustainability

In the context of fleet capacity, environmental sustainability concerns the sustainable use of the fishery's target species and of the ecosystem, as well as the environmental performance of the vessels and fleet.

The current management systems limit fleet activity in order to limit fishing mortality and increase the biomass of the fishery's main species. A comprehensive management plan is needed to reconcile species and ecosystem impacts in all fisheries. Scottish Fisheries managers introduced a promising measure at the beginning of 2008 in the form of Conservation Credits Scheme. The scheme is managed by a Steering Group made up of fishers, scientists and environmental NGOs meeting regularly to monitor, modify and ensure optimum operation of seasonal and real time closures and voluntary avoidance of sensitive "amber areas" aimed at avoiding catches and discards of juvenile cod.[34] [35] The areas are identified with the local knowledge of participating fishers, and vessels avoiding amber areas have significantly fewer discards and earn Conservation credits in the form of other fishing quotas, proving that incentives can be built into regulations.

Numerous technical measures informed by gear technology research[36] have also been supported by the industry, which have led to reductions in ecosystem impacts on non-target species that may be protected, endangered, and on sensitive marine habitats.[37] Trawling or dragging gear and larger vessels are commonly banned in European territorial waters to reduce gear conflicts, and area management is increasingly used to protect sensitive habitats and ecosystems such as offshore and deep sea reefs, either seasonally or permanently.

The Communication on an Integrated Maritime Policy[38] reaffirmed Europe's determination to "take firm action towards the elimination of discards[39] and of destructive fishing practices such as high seas bottom trawling in sensitive habitats. The Communication on "*destructive fishing practices in the high seas and the protection of vulnerable deep sea ecosystems*"[40] introduced the principle of prior environmental impact assessment (EIA) for fishing activities. Prior assessments will help develop an ecosystem-based approach to fisheries management and collect more precise information on fishing capacity deployment in time and space, but it will be some time before EIA are available for the main fisheries.

The environmental performance of the European fishing fleet has not received much interest in the past, although support is available from the European Fisheries Fund (Priority Axis measure 1.3[41]). It can be significantly improved, from its fuel and other input consumption and its production, to the disposal and recycling of its rubbish, engine oil, gear or fish waste.

Finally, a vision to transform European fisheries championed by the NGO coalition OCEAN2012[42] calls for the application of a set of transparent sustainability criteria to shape the future structure of fishing fleets and the allocation of fishing rights (Box 8), in order to achieve environmental sustainability, a more equitable distribution of access to the available fishing resources and a culture of compliance.

[34] http://www.seafoodscotland.org/index.php?option=com_content&task=view&id=433&Itemid=107
[35] http://www.scotland.gov.uk/Topics/Fisheries/Sea-Fisheries/COMPLIANCE/closures
[36] http://ec.europa.eu/research/fp6/ssp/degree_en.htm
[37] See for a review WWF-Germany, 2008. Broeg, K. Towards Low Impact Fishery Techniques, 63pp.
[38] COM(2007) 575 final, 10.10.2007. An Integrated Maritime Policy for the European Union.
[39] COM(2007) 136 final, 28.3.2007. A policy to reduce unwanted by-catches and eliminate discards in European fisheries.
[40] COM(2007) 604 final, 17.10.2007. Destructive fishing practices in the high seas and the protection of vulnerable deep sea ecosystems.
[41] COMMISSION REGULATION (EC) No 498/2007 of 26 March 2007 laying down detailed rules for the implementation of Council Regulation (EC) No 1198/2006 on the European Fisheries Fund
[42] http://www.ocean2012.eu Transforming European Fisheries, Discussion paper, 8 June 2009, 10p.

- High Selectivity - fishing methods with low by-catch
- Low Environmental impact – of gears and practices such as damage to the sea bed and pollution
- Low Energy consumption - per tonne of fish caught
- High Employment and good working conditions – complying with 2007 International Labour Organisation (ILO) Work in Fishing Convention
- Best Quality of product
- History of compliance – from fishers and Member States

Box 8: OCEAN 2012 criteria for sustainable fisheries (2009)

3.2 Economic sustainability

The fisheries manager determines the Total Allowable Catch (TAC) or fishery's yield that can be taken by all vessels. The vessel owner attempts to maximise the value of the fish he/she can catch (production output) and minimise costs (inputs, capital and labour). From the economics of a fishing business point of view, any reduction of fishing mortality means a reduction of production (from the combination of fleet capacity*technology*fishing time) leading to short-term costs before potential higher more sustainable long-term gains.

Beyond this simple picture, several points are important to note:

- a sustainable management of fisheries economics demands that fishing effort (in economic terms) be at the Maximum Economic Yield (MEY), which is generally lower than the Maximum Sustainable Yield (MSY).[43] For managers to ensure a fishery remains around its economically sustainable (MEY) level, the costs of fishing need to be monitored and analysed for all fleet segments operating in the fishery, including small-scale inshore vessels;
- Fisheries management regulations such as gear modification, reduced numbers of days fishing or closed areas, increase the costs of fishing[44 45]. Collaborative work with the industry is necessary to identify more effective measures and ensure better compliance (reduced Illegal, Unregulated and Unreported – IUU - catches);
- In a fishery with poorly defined individual fishing rights fishing vessels compete for a higher catch (race to fish), as well as for a better price on the market. Although this may increase the cost of fishing for some vessels, it also decreases the profitability of the entire fleet. Similarly, the natural drive to increase fishing business efficiency goes against most of the fisheries managers' efforts to control fishing capacity;
- From an economic sustainability point of view, decommissioning schemes are equivalent to direct subsidies, but schemes that include cost recovery from vessel owners remaining in the fishery may bring transitional economic benefits; and finally,
- To be economically sustainable, a fishery also needs to keep account of the public funds that are used by the fishery management process. Evaluations and monitoring need to be done by fleet-segment at national and coastal communities levels, and at European level to ensure that some groups in the catching sector are not unfairly supported or burdened by European regulations.

3.3 Social sustainability

Economic and social impacts are often taken together.[46] Depending on the fishery, some 'socio-economic' impact may simply be assumed in the form of decreased returns proportionate to the catches not made,[47] while social impacts may be in terms of short-term losses of catching and catch-handling jobs, balanced by longer term job gains as stocks increase.[48]

[43] Kelleher.K., R. Willmann and R. Arnason (2009) The sunken billions. The economic justification for fisheries reform. World Bank and FAO, 100pp.

[44] cf. Curtis, H., C. Brodie, S. Metz and L. Obeng, 2009. Assessing the economic impact on the UK fleet of the cod recovery plan, West of Scotland measures and the economic downturn, Final Report Seafish Industry Authority, 97pp.

[45] The Scottish Government Cod recovery Plan EIA Scotland (2009) http://www.scotland.gov.uk/Topics/Fisheries/Sea-Fisheries/ScottishFisheriesCounci/CodRecvoeryPlanFull

[46] 2007 European Commission policy paper on by-catches and discards Impact Assessment of COM(2007) 136 final, A policy to reduce unwanted by-catches and eliminate discards in European fisheries

[47] SEC(2007) 1315, 17.10.2007. Impact Assessment of Proposal for a Council Regulation on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears, from http://ec.europa.eu/governance/impact/ia_carried_out/cia_2007_en.htm#mare

[48] Impact Assessment of COM(2007) 136 final, A policy to reduce unwanted by-catches and eliminate discards in European fisheries

More detailed analyses of social impacts are available since the European Impact Assessment (IA) system was introduced in 2002,[49] in number of full-time equivalent (FTE) jobs in each member state and fleet segment[50] and equivalent value of landings per employee in the catching and in the processing sectors.[51] In 2009, the European Commission produced revised Impact Assessment Guidelines in 2009,[52] and its key questions (Box 8) will have to be used in future fisheries regulatory impact assessments.

- Employment and labour markets
- Standards and rights related to job quality
- Social inclusion and protection of particular groups
- Gender equality, equality treatment and opportunities, non - discrimination
- Individuals, private and family life, personal data
- Governance, participation, good administration, access to justice, media and ethics
- Public health and safety
- Crime, Terrorism and Security
- Access to and effects on social protection, health and educational systems
- Culture
- Social impacts in third countries

Box 9: Social impact key questions (from EU Commission Impact Assessment Guidelines)

In the Green Paper 2020 Vision (Box 10), the focus of fleet capacity adjustments is to increase the economic efficiency of the larger vessels, while implying that social objectives would be mostly met by the small-scale coastal fleets. However, for most European fisheries social impacts linked to fleet capacity adjustments are likely to affect all fleet segments including small-scale.

Unfortunately, there is no systematic monitoring across the European small-scale sector. Still to date, most of the information and regulations regarding data collection, the reporting of fishing activity and catches concern the over-15m larger vessels (see Ifremer coord. 2007[53]).

"Europe's fishing industry has become far more financially robust. The industrial segment of the fleet is efficient and independent from public financial support. It operates with environmentally friendly boats and its size is commensurate with the fish it is authorised to catch.

At the other end of the spectrum, small-scale fisheries continue to produce high-quality fresh fish consumed locally and marketed under labels of quality and origin that give higher value to fishermen."

Box 10: Green Paper Vision for European fishing capacity by 2020

Examples of direct social impacts of fleet capacity reduction and associated mitigation measures are given below:

- Loss of earnings and jobs from fishery closures and Recovery Plans (e.g. 2009 Cod Recovery Plan[54]);
- Hardship following poorly designed initial allocation of rights, leading to lost earnings over a number of years, substantial public costs (through litigation and subsequent compensation or buybacks) and unknown unaccounted local effects (Australian south-east fishery[55]; Icelandic Association of Small Boat Owners court action against cod ITQs; and lack of quota in UK under-10m fishery[56]);
- Lack of consultation, participation and allocation of rights to non-owning captains and crew members in US ITQ programmes (McCay, 2001[57]); or conversely, measures to compensate crew as well as vessel owners (Italian clam dredge fishery; Australia's Business Exit Assistance Scheme under the *Securing our Fishing Future* Structural Adjustment Package; Korea decommissioning scheme[58]);

[49] See http://ec.europa.eu/governance/impact/ia_carried_out/ia_carried_out_en.htm
[50] SEC(2008)386, 2.4.2008. Impact Assessment regarding the Commission's proposal establishing revised measures for the recovery of cod stocks http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2008/sec_2008_0386_en.pdf
[51] SEC(2009)103, 5.2.2009. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2009:0103:FIN:EN:PDF
[52] Revised in 2009, see http://ec.europa.eu/governance/impact/commission_guidelines/commission_guidelines_en.htm
[53] See Ifremer (coord.) 2007. Small-Scale Coastal Fisheries in Europe, Final report of the contract No FISH/2005/10, 447 p.
[54] North Seas Commission Resolution on the Effects of Current Cod Recovery Plan, 26.06.2009 http://www.northseacommission.org/nscwomen/fishdoc/doc_download/331-cpmr-nsc-cod-recovery-resolution.html
[55] See Shotton, R. (2001). Initial allocation of quota rights, The Australian southeast trawl fishery story, 15pp. ftp://ftp.fao.org/docrep/fao/004/y2684e/y2684e16.pdf
[56] ICSF, 2009. Post workshop press release, Common Fisheries Policy Reform (CFP) in Europe: Small-scale fishers demand fair treatment, not protection http://eussf.icsf.net/icsf2006/jspFiles/euSSFisheries/english/brusselsWorkshop.jsp
[57] McCay, B., 2001. Initial allocation of individual transferable quotas in the US surf clam and ocean quahog fishery. FAO Fisheries Technical Paper pp. 86-90.
[58] OECD, 2009. Reducing fishing capacity. Best practices for decommissioning schemes. 120p.

- Purchase by environmental NGOs[59] of limited entry trawl permits as a means to provide compensation payments to offset the local economic costs of fisheries ecosystems habitat protection (Pacific Groundfish Fishery);
- Buyback schemes leading to the allocation of community quota (US Alaska crab fishery; New England Groundfish fishery; Pacific Groundfish Fishery); provision of community rights and aggregation limits to protect small-scale operators, and coastal communities (MRAG, 2009) .

To conclude, we note that environmental sustainability will benefit from a greater socio-economic focus for fisheries management (World Bank-FAO[13] Box 11).

"Many national and international fishery objectives focus on maintaining or increasing capture fishery production, and it is argued that national policies would benefit from a greater focus on maximizing net benefits and choosing economic or social yield as an objective rather than continuing to manage fisheries with maximum sustainable yield as an objective. Such a socio-economic focus implies that planners and decision makers devote greater attention to reform of the pernicious incentive structures driving fisheries over-exploitation"

Box 11: A concluding remark from The Sunken Billions (World Bank and FAO, 2009)

? How should the EU fleet look after the implementation of capacity reduction and fleet restructuring policies? What makes up an environmentally, economically and socially sustainable fleet?

[59] Environmental Defense, 2007 Sustaining America's Fisheries and Fishing Communities, http://www.edf.org/documents/6119_sustainingfisheries.pdf

Abstracts

Sidney Holt

Advisor to Global Ocean and Ocean2012

The relation between adjustment of fishing capacity and the MSY management objective

Abstract:

Many scientific studies have shown that a simplistic interpretation of the MSY notion is neither rational nor safe. However, a re-interpretation might be operationally feasible. The interpretation would be to seek as high an average catch over a pre-determined time period as is compatible with negligible risk of accidentally depleting a fish stock to a level (and to a stock composition) to substantially less than a designated optimum. The problem is to seek a management algorithm that meets those management objectives and at the same time is compatible with a third objective: to maintain stability insofar as that is possible in the light of natural variations in the fish stocks. These three stock-management objectives may be viewed as parallel with three fishery management objectives: to ensure continuing supplies of high value fish; to ensure profitability; to provide jobs and sustain fishing communities.

It has long been known that limitation of fishing effort has great advantages over limitation of catches for meeting these requirements. Limitation of output – catches – has dominated most efforts at regulation, however, because it appears to be simple and also because data on recorded catches are the most common and easiest types of statistical information on which to base assessments and regulation. Previous efforts at effort limitation (for example the classical case of the halibut fishery off the North American west coast) have largely failed because fishing capacity was not limited, and effort was therefore constrained by, for example, limiting the time spent at sea, thereby introducing economic inefficiencies.

The European Union is in the process of reducing fishing capacity, but not yet considering regulation of its deployment as the main controller of the impact of fishing operations on the fish stocks. I would encourage the authorities to look again closely at this option. It would, inter alia, dramatically change the problem of "discards" and other non-target catches, although it could be supplemented by some direct control of catches as a secondary "tuning" measure.

Fishing capacity limitation would also allow us to properly address the matter of securing profit (rather than needing subsidy) by, as the World Bank and FAO, as well as scientists and economists, have suggested, aiming at catching rather less than the maximum, with an effort, and therefore a cost, substantially less than needed to secure maximal sustainable catches.

About the speaker:

Now in retirement in Italy, Sidney was the co-author, with the late R. J. H. Beverton, of a book – On the Dynamics of Exploited Fish Populations – published in 1957, which has been called "The Bible" of fisheries science. The fourth printing of that book, with a historical introduction and update by Sidney, appeared in 2004. He has published more than 200 other documents, scientific papers and book chapters on various aspects of marine living resources research, conservation and management.

Sidney served with the UN System for 25 years, including as Director of FAO's Fisheries Resources and Operations Division, in Rome. He has also worked for UNEP, Unesco/IOC (as Secretary of the Intergovernmental Oceanographic Commission) and the UN (during the conference that led to UNCLOS) and has held chairs/fellowships at the Universities of Malta, California Santa Cruz, Rhode Island and Cambridge, England. As a senior UN staff member Sidney has been associated with several of the international regional and specialised fisheries management organisations, being involved in the establishment of some of them.

Sidney has received several prestigious awards for his contributions to marine conservation: Gold Medal of WWF; Blue Planet award of IFAW; Global 500 of UNEP; Royal Netherlands Golden Ark. He has served, and still serves from time to time, as marine policy and science consultant to several NGOs and Governments.

Hans Polet

Head of Section Fishing Gear Research, Flemish Institute for Agricultural and Fisheries Research (ILVO)

Environmental aspects of fishing: finding the balance between exploiting marine resources and respect for nature

Abstract:

Despite the observation that growth is still the credo of our modern economy, people dealing with sea fisheries have since several years now understood that there is an limit to growth. The fishing capacity of a fishing fleet needs to be in balance with the productive capacity of fish stocks. On top of this, the fishing capacity should also be in balance with the carrying capacity of the marine ecosystem because it is sensible to assume that healthy fish stocks need a healthy ecosystem. The impact that fishing has on the marine ecosystem depends, beside the fishing effort, strongly on the fishing method. There is a big difference in impact, both in the nature and in level, between active and passive fishing gear. Within each group, the impact is also quite variable. There is also quite some variability in stress imposed on the different ecosystem components. This presentation will give a general overview of the impact fishing can have on the ecosystem.

About the speaker:

Dr. ir. Hans Polet has been a Research Scientist to the Section Fishing Gear Technology since 1990. He has been active in the fields of fishing gear research, selectivity of fishing gear, reduction in fuel consumption, alternative fishing methods and environmental impact of fishing activities and has many years of experience at sea, on board of research and commercial vessels. Hans Polet is a member of the ICES Fisheries Technology Committee, and of the ICES Working Group on Fishing Technology and Fish Behaviour, and took part in several meetings of related study groups. He also is a member of the Scientific, Technical and Economical Committee for Fisheries (STECF) of the European Commission (DG MARE), and of the national (Belgian) Working Group on Safety on Board of Fishing Vessels. Hans Polet has been involved in many national and international co-operative R&D projects, mostly funded by the EU.

Marloes Kraan

Policy Officer for Responsible Fisheries, Dutch Fish Product Board

Fishing for the future; social and societal aspects of sustainable fisheries

Abstract:

The strength of the sustainability concept is that it links three important concepts with each other: people, planet, profit. Interestingly enough the organizers of this conference have invited me to speak about one of the three: people. Although I believe that speaking of a sustainable fleet only makes sense when combing the three p's, I would like to take up the challenge of focusing on the p of people for a couple of reasons. First of all the p of people is often taken for granted. Especially in discussions on sustainable fisheries in Northern Europe the image persists as if that part 'is taken care of'. The fishermen live in welfare states, thus social security is well taken care of and safety regulations have been arranged for. What the p of people further stands for, is often not made clear. Probably it will have something to do with folkloristic attributes and some sort of nostalgia related to fishing communities. The importance of fisheries for society at large is often minimized as not being an important part of the economy, thus after having said that people do not reason much further than that fisher vessels in harbours are 'good for tourism'.

What I would like to plead for in this presentation is that the p of people is much more than that. Striving for sustainable fisheries means that one wishes that fishing will take place in the future. For societies sake because fish is an important element in people's diet; fisheries is part of the world's much needed food production. And we should cherish the value of fresh, healthy and 'wild' food. Secondly we strive for that together with those people who do the fishing: the fishermen. The p for people in sustainable fisheries also stands for the p of participation in management, fishermen's knowledge. Knowledge that has become what it is through years of experience, within the framework of the norms and values of their communities. A sustainable fishery policy thus also seeks to sustain the fishing communities, makes use of and strengthens existing institutions (norms, values) that exist in these communities. Sustainable fisheries should thus be inclusive, bottom up and take account of fisher's knowledge and address their perceptions.

About the speaker:

Marloes Kraan started working at the Dutch Fish Product Board in 2008 as policy officer responsible fisheries. The Dutch Fish Product Board is a public-law industrial organisation of and for the entire fish industry (fisheries, aquaculture, processing and trade) and has developed a multi-annual Responsible Fish(ing) Plan.

Before this, she studied Cultural Anthropology at the Vrije Universiteit in Amsterdam (1994-2001) and then worked at the University of Amsterdam at the Human Geography department (AMIDSt) where she wrote her PhD thesis 'Creating Space for Fishermen's Livelihoods' (2002-2007). The thesis (2009) provides a detailed empirical description and analysis of artisanal fishermen in Ghana. It shows how fishermen actively negotiate livelihood space in a situation of multiple governance structures and migration. From 2002-2007 she also worked at the Centre for Maritime Research as junior researcher. She was lecturer for the People and the Sea lecture series, worked for the journal Maritime Studies (MAST), and (co-)organised the People and the Sea conferences. Currently she is associate researcher to the Centre of Maritime Research (MARE) in Amsterdam.

Aniol Esteban

Head of Environmental Economics, New Economics Foundation (NEF)

Economics for sustainable fisheries

Abstract:

This session describes sustainable fisheries from an economic perspective. It discusses the different meanings of the term "economic" when applied to the business and to the policy-making sector; from financial profitability to the inclusion of wider policy goals. It argues that existing economic goals, tools and methodologies informing policy making are not fit for purpose; and that unless these are changed it will not be possible to deliver sustainable EU fisheries.

For example, commercial fishing activity that leads to overexploitation of natural resources (i.e. depreciation of natural capital) still counts as positive economic output into GDP. At the micro level, economic analysis is the most used tool to guide policy-making but its heavy reliance on market values means that environmental and social outcomes – difficult to express in monetary terms - are often left out of the equation. Similarly, improper use of discount rates can push "future benefits away" encouraging short-term decisions versus the mid-term decisions required to move towards a sustainable fleet.

Governments and policy-making should have indicators that tell the real story about the contribution that their national fishing sector makes towards their national economy; and methodologies that reveal the full costs and benefits of their decisions. The session outlines a few suggestions in this direction.

About the speaker:

Aniol Esteban is head of the Environmental Economics at the new economics foundation (nef). Aniol's twelve years professional experience have been devoted to the environment, with jobs in NGOs, and the public and private sector. He holds an MSc in environmental economics from UCL, London, and a degree in Biology from the Universitat de Barcelona.

Prior to joining nef, Aniol worked as an economist at the Royal Society for the Protection of Birds (RSPB), and worked on capacity-building for environmental organizations for WWF's Mediterranean Programme. He has a thorough knowledge of EU institutions from his involvement in research projects and working groups with a focus on marine, water and nature conservation policies.

Aniol has published reports on the economic impacts of nature conservation on local economies and its contribution to human well-being. His main interest is in describing the economic value of the environment as a way of encouraging policies that increase both well-being and environmental sustainability.

Sophie des Clers
Independent Consultant

Overview of European fishing fleet capacity management

Abstract:

The Green Paper (2009) consultation ahead of the Common Fisheries Policy (CFP) reform singles out the "deep-rooted" problem of feet over-capacity as the most important cause and effect of Europe's unsustainable fisheries. In 2008, the European Commission estimated that fleet capacity was "capable of catching between two and three times the European fisheries maximum sustainable yield".

We review Europe's capacity reduction programmes and why they failed to deliver a sustainable fleet, both in terms of decreasing fishing mortality and of reduced ecosystem impacts.

We then discuss two root causes for the European fleet's lack of capacity adjustment. First, there has been no Plan of Action and, until 2008, no indicators linking capacity to fishing mortality in the majority of fisheries. We present the new set of technical, biological, economic and social indicators to be used by Member States by fishery and by fleet segment. A first analysis of the Member States annual reports that link fishing capacity to fishing opportunities for the first time, shows that the fleet segments reported on are mostly in the red financially because of lack of fish.

A second root cause is the open character of many fisheries and the problems associated with the right-based management systems used at present, which for most quota-managed species have failed to address initial allocation problems, to improve governance, and to deliver environmentally, economically and socially sustainable fisheries.

About the speaker:

Sophie des Clers is an independent consultant based in London UK. Initially a mathematical modeller, her work is now mostly at the junction between policy, research and implementation of sustainable fisheries management systems. Recent projects include the convening of a stakeholder workshop for the European-funded DeepFishMan project tasked to develop management plans for deep-sea fisheries; the development of a participatory protocol for the collection of fishing activity data for the UK Marine Conservation Zones projects; and the forthcoming Rent review for the Falkland Islands Fisheries Department.

Sophie has been a Team leader in numerous consultancy assignments in Europe and West Africa. She is a also regular evaluator of European research projects, and a corresponding IPCC author on socio-economic adaptation and mitigation of climate change effects on fisheries. She is an Honorary Senior scientist at the Geography Department of University College London, where she also lectures and supervises students projects on the importance of stakeholders to coastal and marine environmental science and policy.

She holds an MSc in Ecology from Paris 6 University, a PhD from in Biometrics from Lyon University in France, and an MSc in Public Policy from University College London.

Dale Squires

Senior Scientist, National Oceanic and Atmospheric Administration (NOAA)

Lessons from fisheries buybacks

Abstract:

Buybacks of vessels, gear, licenses, and other forms of fishing rights are widely used throughout the world to address overfishing, overcapacity, distribution, and increasingly conservation of biodiversity and ecosystems and strengthening a period of transition to a more rationalized fishery, including rights-based management.

Lessons can be learned from buyback programs throughout the world to improve meeting objectives at lower cost. This presentation discusses reasons for buybacks; critical preconditions; examines consequences, auction and other program design issues, and buybacks as a transitional policy instrument to a more rationalized fishery; draws out lessons from the international experience; and provides an overall evaluation.

An important theme is that buybacks are a strategic choice that affects incentives and the need to establish positive and negative economic incentives through the design of the program itself. The form of fisheries conservation and management both prior and post to the buyback program are also critical.

About the speaker:

Dale Squires is a Senior Scientist with the National Oceanic and Atmospheric Administration (NOAA) Fisheries in La Jolla, California, an Adjunct Professor of Economics at the University of California San Diego, and a member on the Scientific Committee of the International Sustainable Seafood Foundation. He has worked on the economics and management of both artisanal and commercial fisheries in North America, Asia, Europe, and Australia.

He has worked with FAO, OECD, World Bank, WorldFish Center, tuna Regional Fishery Management Organizations, environmental groups, and governments around the world, has been a visiting professor at a number of universities, and a member of diplomatic negotiating missions.

Dale Squires is the author of over 75 peer-reviewed scientific papers, co-author or co-editor of 6 books, including co-editing (with Rita Curtis) /Fisheries Buybacks/ published in 2007 by Blackwell, and former Associate Editor of /Journal of Environmental Economics and Management /and /American Journal of Agricultural Economics/. His current focus is on international tuna fisheries and sea turtles, with forthcoming books on each, and on technical change in renewable resources.

Per Sandberg

Head of the Statistics Department, Norwegian Directorate of Fisheries

Regulating fleet capacity – The Norwegian experience

Abstract:

Norway has a diversified fleet of both coastal vessels and large purse seiners and trawlers. Key components which influence the capacity of these fleets are described. Some preliminary indicators of how they have worked are discussed.

About the speaker:

Per Sandberg, 48 years old, works as Head of the Statistics Department at The Norwegian Directorate of Fisheries, www.fiskeridir.no, in Bergen. Sandberg is an economist and has worked with the Directorate of Fisheries since 1989. In 2006 Sandberg defended his PhD in fisheries economics at The Norwegian School of Economics and Business Administration.

Astrid Scholz

Vice President for Knowledge Systems, EcoTrust

Restructuring fishing fleets for economic, social and ecological sustainability – an example from the West Coast of the United States

Abstract:

The groundfish fishery off the West Coast of the USA comprises over 80 species that are targeted with diverse gears and fishing vessels. It is one of the more valuable fisheries in country, and has seen precipitous declines in both landings and revenues over the last 20 years. There is now general agreement among fishers, scientists, environmentalists and regulators that there are too many boats chasing too few fish. Federal regulation of the fishery for the states of California, Oregon and Washington lies with the Pacific Fishery Management Council, one of eight regional fishery management councils established under the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (reauthorized in 2006).

In October 2000 the Council adopted a groundfish fishery strategic plan entitled "Transition to Sustainability." The core objective of the Council plan is to bring the harvest capacity of the fishery in line with resource productivity. The plan proposes a coast-wide fleet reduction of at least 50% and recommends the maintenance a diverse fleet, by both port and gear-type.

Ecotrust took the Council's strategic direction as the impetus for a two-year project conducted in 2001-2003, the "Groundfish Fleet Restructuring Project". The project assessed options for the reduction of fishing capacity from a coast-wide port and community perspective, in the context of important issues such as future fleet diversity, social impacts, small business viability, and potential interactions with stocks of other target species such as crabs or salmon. The tools and results from the project continue to inform the design of fishery management measures such as catch share systems on the U.S. West Coast, and might be instructive for decision-makers and stakeholders in the European Union.

About the speaker:

Astrid Scholz is Vice President for Knowledge Systems at Ecotrust, a Portland, Oregon, based conservation organization committed to building a future that strengthens communities and the environment from Alaska to California. Responsible for managing Ecotrust's consulting, analytical, technical and cartographic capacities, she oversees a staff of 15 and a variety of projects at the intersection of social, economic and ecological systems.

Astrid is an affiliate faculty member of Oregon State University's College of Oceanic and Atmospheric Sciences, and is the co-editor of a book on integrated marine geographic information systems, Place Matters, published by OSU Press. She serves on the boards of Habitat Media, Comunidad Y Biodiversidad, and the Living Oceans Society, and is a member of the Master Plan Science Advisory Team to the Marine Life Protection Act Initiative in California.

She holds an M.A. in Economics and Philosophy from the University of St. Andrews, an M.Sc. in Economics from the University of Bristol, and a Ph.D. in Energy and Resources from the University of California, Berkeley.

Conference Proceedings

Keynote Addresses

1. Poul Degnbol, DG MARE

The speaker made the following main points:

- There is overcapacity in the EU fleet – any reductions have been cancelled out by technological innovation. Although the data on what the capacity should be are inadequate, clear signs of overcapacity include the facts that many vessels operate part-time, and that fishing mortality is too high for many stocks.
- Overcapacity has been maintained by subsidies.
- This overcapacity creates perverse incentives that lead to circumvention of regulations and economic inefficiency.
- There are differences between stocks, seas and Member States – in some areas capacity is appropriate, in others not.
- Better data are needed to measure capacity – this is the responsibility of Member States, but a common methodology is being developed.

The speaker suggested that there were two main approaches to capacity reduction: i) public intervention (i.e. a top-down approach) and ii) market-based instruments that establish incentives for fishermen to behave in accordance with wider societal goals. So far, the first approach has mainly been tried – either by putting individual binding targets on Member States, or by imposing an overall ceiling within which Member States were free to act. Neither of these has been successful, mainly because the targets were too high – not ambitious enough. Member States may also have conflicting goals – some may want economic efficiency while others would prefer to maximise employment. Market-based approaches would incorporate various kinds of tradable rights, plus increased cost-sharing by the industry – this type of approach is the responsibility of Member States, with a limited role for the EU.

The speaker proposed that the context in which the fleet operates could also be altered to allow the fleet to restructure towards economic efficiency:

- A more local or regional approach – context sensitive
- The industry should take more responsibility
- Outcome-based rather than micro-management

Finally, he noted some other issues which need to be considered in this context:

- Capacity reduction leads to a reduction in employment in the sector – i.e. has social consequences (which may vary over time). Should small-scale fisheries be protected? But these fisheries also suffer from over-capacity and may also have a big impact on the resource.
- Health and safety on board is an important issue for fisheries
- In order to reduce the ecological impact of fisheries as much as possible, should capacity reduction be selective? This suggests some kind of public intervention in the process. An alternative might be to specify the desired outcome (in terms of the resource) and allow the industry to decide how to get there.

A question was asked about subsidies in relation to ITQs. The speaker made the point that the proper operation of ITQs was impossible in the presence of subsidies, so that the subsidy issue had to be addressed. He noted that EU fisheries still had many kinds of subsidies, and that even subsidies for decommissioning had led in some cases to increased capacity. More generally, when programmes to incentive fishermen to behave in a certain way (subsidies or other) are poorly designed they may have unintended consequences.

2. Axel Wenblad, Swedish Board of Fisheries

This talk was based on a report from the Swedish Board of Fisheries to the Swedish Government on CPF reform. He discussed the following list of points:

i) Objectives: The objective of the CFP is 'sustainable economic, environmental and social conditions' for EU fisheries. He questioned how this objective could be translated into management in a meaningful way, and proposed that objectives should be more hierarchical and measurable over a specific time-frame. A possible set of alternative objectives might be based around the following list:

- Production of seafood in a sustainable way
- Healthy marine ecosystem
- Creation of employment, income, recreation, culture etc.

ii) Scientific advice: Good scientific advice is crucial and expensive. ICES has done an excellent job, but a real move towards a more ecosystem approach will be expensive – the EU will have to be prepared to pay. Good analyses are lacking for the economic and social aspects of sustainability.

iii) Decision-making process: The process is currently micro-managed – 27 European fisheries ministers discussing the mesh size of a trawl ?! – and we need to move away from that towards over-arching guidelines. The politicians should be deciding on outcomes (the 'what') and leave it to experts to deliver the 'how'. The speaker also proposed that decision-making should be more regional or local. Overall, this type of decision-making would need a new structure with more stakeholder involvement, and he proposed that the RACs were a good start, but did not go far enough – stakeholders needed to be involved in the 'what' as well as the 'how'.

iv) Rights-based management: The speaker first noted that this solution to fisheries management was not by itself the Holy Grail – the public ownership of marine resources was also an important principle and therefore rights have to be limited – i.e. fishermen obtain 'use rights' rather than 'property rights'. He noted i) that management costs needed to be at least partially borne by the industry; ii) the in some cases rights needed to be trans-national; iii) that rights-based management in small-scale fisheries was difficult to management and needed careful consideration; and iv) that any rights-based management system needed careful design – some had been successful in delivering sustainable fisheries and other had had unintended consequences. The speaker felt that it is difficult for the public sector to design a successful market (and noted the example of carbon trading), so had to be careful to monitoring and make adjustments as necessary – but at the same time be careful not to over-regulate.

v) Data on over-capacity: The speaker noted that we need a better way of measuring fishing capacity than kW and GT – in particular a way of measuring technological creep; this is not of itself a bad thing (since it leads to increased efficiency) but it does lead to over-capacity unless managed. Improved methodologies are under development by the FAO, the EU and others. He also noted in this context that subsidies must go.

vi) Relative stability: He noted that this is a difficult issue but suggested it would be wrong to dismiss the concept without careful consideration of the consequences.

vii) Distant water fishing: Currently there seems to be an expectation of bad management in these fisheries – we should expect good management and help third countries and RFMOs to achieve it.

Finally, the speaker suggested that fisheries should adopt a long-term management plan based on science and then follow it!

Setting the Scene

3. The relation between adjustment of fishing capacity and the MSY management objective - Sidney Holt

Firstly, the speaker proposed to move from a concept of 'sustainable yield' to a concept of 'maximum sustainable yield' – a sustainable yield can come from a stock at any stock-size, but maximum sustainable yield requires a large stock size, and is more likely to be economically profitable. He noted that scientists have been criticising the concept of MSY for many years, but suggested that this arose from a blind, deterministic application of the concept, while the reality is uncertain and stochastic.

What is needed is to find a compromise between two conflicting objectives:

- high catches
- risk of depletion of the stock

He proposed considering the contribution made by IWC in bringing these two objectives together: i.e. to achieve high yields with low risk. They propose, rather than aiming at MSY in the narrow sense, to aim for a high average catch for a set period of years. This means that before 'sustainable' can be defined, the time frame has to be defined. For whales this is usually 100 years, but for most fish species it could be less.

The speaker thus proposed to redefine MSY over a longer time horizon – i.e. the maximum average catch over a given pre-determined time frame. In this way, it remains a useful concept (sometimes termed 'average MSY' or AMSY).

Secondly, the speaker suggested that scientific assessment often need to be more robust, and that this can be achieved by the use of computer simulation. Once a robust management algorithm has been developed (allowing for unreported catch), this should then be used - without argument and negotiation.

Thirdly, the speaker suggested the regulation of input (i.e. fishing effort) rather than output (i.e. catches). The fishing effort has to be calibrated so that the effect of regulation on yield can be assessed, but once this is done the issue around catch regulation (e.g. discards) disappear. This may, however, not be straightforward since the relationship between fishing effort and catches may be non-linear. However, regulating effort also means regulating capacity – otherwise the fishery may end up with inefficient operation (all vessels operating two days per year – as in the Pacific halibut fishery). A recent World Bank / FAO paper suggests that if global fishing capacity were halved, profitability would rise by 50%.

A questioner asked about defining single stock targets. The speaker suggested that such targets (such as ICES reference points) were essentially arbitrary and often dangerous (i.e. set very low) – a more robust management algorithm would eliminate the need for such targets. Fundamentally, the management system should not include arbitrary fixed boundaries with no biological basis.

What Makes a Fleet Sustainable?

4. Environmental aspects of fishing: finding the balance between exploiting marine resources and respect for nature - Hans Polet, Flemish Institute for Agricultural and Fisheries Research

The environmental damage caused by fishing gear poses a political or social question: how much ecosystem damage are we prepared to accept in return for seafood? In reality, we don't know where the right balance lies – but we know that we are beyond it now. Impacts are on the target species, other species and on habitats.

The speaker first made the following general points:

i) Target species: A film taken on a cod fishing boat shows the deterioration in EU fisheries since the 1970s in the quantity and size of fish caught per tow. The exploitation of some fisheries has been comparable to mining. We are also fishing down the food web, and causing wider changes in marine ecosystems (e.g. a decline in cod may have led to an increase in shrimp due to trophic relationships?).

ii) Discards: The effect of fishing on non-target species is to shift ecosystems towards less vulnerable species and away from more vulnerable species. It also provides food for scavengers, leading to further distortion.

iii) Physical impacts: These habitat impacts are variable depending on the location – may be detectable for less than a day or for several years. It may remove much of the filter feeding biomass, leading to a change in ecosystem energy flow as well as a loss of shelter and habitat (such as for juveniles of commercial species). Some gears may also penetrate the seafloor, stir up nutrients and sediment and expose infauna to predation.

iv) 'Charismatic' species: Populations of these species (dolphins, birds) may be sensitive to even small amounts of additional mortality.

v) Ghost fishing: Again this depends on the area – a gillnet lost in a sheltered area may fish for many years, while in strong currents it will quickly roll up.

The speaker then gave an overview of the impacts of each main gear type:

- Pelagic trawls: The main impact is from 'catch slipping' – if the individuals making up the catch are too small it may be dumped. The trawls are also sometimes followed by marine mammals.
- Purse seines: Similar issues, although slipping may be possible with less mortality. Marine mammal by-catch has been reduced by technical solutions.
- Beam trawls: Cause severe habitat damage and also use a lot of fuel. Much of the catch is discarded. However, they are also efficient in catching valuable species and may be appropriate in some areas with the right mesh size.
- Otter trawl and twinning: As above, although does not penetrate the sediment as much as a beam trawl (but may be much larger).
- Danish seine / flyshooting: Provides a good quality catch for relatively low fuel use and reduced discards relative to trawls – the lowest-impact active gear.
- Set nets: Low fuel use and low direct impacts, but ghost fishing a problem, as is incidental mortality of marine mammals.
- Longlines: High quality and low impact. Seabird mortality a problem but again there are technical solutions.
- Pots and traps: Selective, good quality and low impacts. Ghost fishing reduced by escape panels.

In summary, it is not straightforward to assess the 'best' gear – depends a lot on the species and area. To that extent, the choice of gear needs to be micro-managed. However, in reality it is difficult to regulate gears without a good understanding of how they work at sea in a given area. Thus regulation from behind a desk does not work – it is vital to talk to fishermen. Even better – decide the desired outcome and let the fishermen decide how to get there. While input management is important in regulating effort and capacity, up till now it has been much too specific.

5. Fishing for the future: social and societal aspects of sustainable fisheries - Marloes Kraan, Dutch Fish Product Board

The speaker started by putting 'sustainability' in the wider context of 'People Planet Profit' – i.e. emphasising the wider definition rather than the narrower 'environmental' use. In particular, the 'people' aspect in sustainable fisheries is often in EU fisheries narrowly understood as 'fish good for health' and something vaguely related to the value of fishing communities and cultures. However the 'people' aspect should also include participation. Participation and co-management of fisheries can serve a very important role:

- Provides a reality check on management plans
- Self-control is more effective than government control
- Improves the legitimacy of governance and control measures (assuming the system is well designed)

However, there are some issues to consider:

- Who should participate? Just fishermen? or other stakeholders such as NGOs
- Do the representatives really represent their group?
- Are the participants committed to the outcome as well as the process? This is only possible if stakeholders are involved in designing as well as managing the system.

It is also instructive to consider the definition of 'sustainability' in the context of a given fishery – usually this is a top-down definition imposed from outside. However, fishermen have their own definitions (e.g. these given by Dutch fishermen):

- Investing in the future of the industry
- Ensuring that our sons can go to sea
- Complying with the rules – the ones that make sense

These definitions incorporate both economic as well as social aspects.

These fishermen also had concerns about the sustainability debate:

- Their knowledge was not valued
- The standard expected from them was unclear, and varied over time, or different groups did not agree on what it should be
- They are blamed for problems in other, unrelated fisheries
- A lack of evaluation of management measures – for example, the plaice box does not seem to have work, but yet it remains closed.
- Lack of clarity between NGOs – mixed messages and not clear who they should engage with

In order to build a socially sustainable fleet, we therefore need to incorporate the knowledge and values of stakeholders. This could be done by developing existing institutions such as the RACs, but here the emphasis so far has been on consultation rather than participation – the emphasis of management is still top-down. We also need to define over-capacity (in social and economic as well as environmental terms). Participatory management needs to be on the relevant scale of people (i.e. local or national, not European). Finally we should not forget that fishing is part of people's identity – i.e. they have a strong driver to stay in business as long as possible; and we need to take into account the wider market – e.g. the role of seafood imports in setting prices.

A question was asked about the social consequences of subsidies. The speaker suggested that we should decide as a society whether we want them or not – some may be desirable, such as public funding for scientific research to support management. Another question addressed the fact that many EU fishing vessels now employ crew from third countries and suggested that in this context, defending employment was more questionable.

6. Economics for sustainable fisheries - Aniol Esteban, New Economics Foundation

The speaker contrasted the usual narrow definition of economic sustainability (in terms of growth, GDP etc.) with a wider one encompassing social and environmental capital ('beyond GDP') but also noted that in the long term we had to look beyond growth-based models. These two definitions could also be applied to businesses, including fisheries: i.e. a narrow definition of a sustainable fleet based on its profitability, or a wider definition incorporating social and environmental concerns.

The speaker also noted that businesses have limited room for manoeuvre in that they can only operate within the strictures of financial viability. This means that if we want a radical restructuring of the fleet, we need to change the management / policy framework in which it operates so that fisheries businesses have the scope to move towards sustainability.

The objective of management should to get the maximum benefit to society from fisheries, so re-structuring should promote high value sectors and reduce low value – bearing in mind that value is not just economic – also environmental and social. Small-scale fisheries may be less economically efficient, but may provide higher environmental and social value – and so have a higher overall value?

In order to tell for sure, we need better economic tools. The conventional tools have the following problems:

- It is hard to monetise social and environmental benefits and harm
- Unsustainable fishing still counts as a positive economic contribution because the full costs and benefits ('externalities') are not monetised and therefore not included
- Discounting makes it hard to invest in very long-term issues such as ecosystem restoration

We need to develop the economic tools to address these issues. Tools exist already to correct GDP to include natural capital – these could be adapted to fisheries. There is also a technique to assess 'social return on investment' – a stakeholder-based cost-benefit analysis.

There are methodological problems with these techniques, however:

- Need to define boundaries (e.g. geographic?)
- How to define what would have happened if the fleet was not there
- How to fix an appropriate discount rate (notes that the Stern Report used a 1% discount rate) – this depends a lot on the time scale you define

Capacity Reduction and Fleet Restructuring

7. Overview of European fishing fleet capacity management - Sophie des Clers, University College London

There is an over-capacity problem in both the large-scale and small-scale fleet – even more so when they operate on the same TAC. The fleet needs to be made sustainable: environmentally (i.e. 'greener' capacity), economic (i.e. fewer, more profitable vessels) and social (i.e. equitable allocation of fishing rights). Particularly on the last point, attempts to restructure up till now have moved in the wrong direction, because the small-scale fleet has largely been forgotten by the fishing rights process.

Restructuring so far as focused on:
- Entry-exit regime
- Restrictions on fishing effort and area closures
- Publicly-aided decommissioning

Overall, these efforts have not succeeded in reducing over-capacity. The 2008 mid-term review of the CFP noted that there had been no drastic reduction in capacity – reductions probably have not kept pace with technological innovation. There are still some subsidies for new entry (e.g. in Axis 1 of the EFF). Also, this approach is disconnected from the needs of specific fisheries, and there is no attempt to remove preferentially the most unsustainable vessels. Thus a new approach is needed.

Rights-based management has also not achieved capacity reduction (e.g. in the Netherlands). An EU study suggests that there is no good evidence that good quality rights for fishermen have led to more sustainable exploitation of the stock, or better fleet profitability.

In 2008, the Commission introduced new indicators, which aim to assess the balance between fishing capacity and fishing opportunities – i.e. to pin down the sectors with the worst over-capacity problems. These indicators try to cover all three elements of sustainability. The Member States so far have not found it easy to calculate these indicators, mainly because of a lack of economic and social data. However, a preliminary analysis suggests that the situation is not good.

In conclusion, the speaker noted that FAO has a plan of action for capacity reduction which might provide way forward:
- Assessment of capacity (underway now with new indicators)
- Pinpoint areas which need reduction
- Set targets and develop an action plan with stakeholders
- Implement the plan with stakeholders

In discussion, a questioner suggested that probabilistic bio-economic modelling may be able to play a role in finding the most painless path between present situation and objectives. Another made the point that it may be necessary to subsidise the process of getting rid of subsidies. A final comment was that the US Government fisheries agency (NOAA Fisheries) has also developed a capacity reduction plan, which may provide an alternative template or source of ideas.

8. Lessons from fisheries buybacks - Dale Squires, NOAA

The speaker presented a review of buyback programmes in US fisheries. Buybacks may have two objectives: i) ecosystem protection (i.e. to implement a protected area or protect a particular species); or ii) to support transition to a more rational management system (e.g. the transition towards rights-based management).

Buy-backs have beneficial short-term effects:
- Increased profits for remaining fishermen (this may lead to higher investment – so that capacity starts to increase again almost immediately)
- Allows less committed fishermen to leave – strengthens fleet socially as well as economically
- Provides a window of opportunity for transition to more robust management system

The long-term effects, however, are less good, because buy-backs do nothing to alter perverse incentives that lead to over-capacity – this means that benefits can only be maintained by ongoing buybacks.

Buybacks can be managed via purchase of permits, vessels or both. Note that inactive permits may become active as the fishery strengthens, so often worthwhile to buy those too. The process is usually via a reverse auction with irrevocable bids. It is also important that scrapping vessels must be a condition of purchase, or buybacks will have impacts on other fisheries. It is also clear that the fishery in question must be limited entry. The programme must have clear objectives, and should be co-managed by the industry.

Problems:
- Buybacks tend to bail out unprofitable vessels – leading to a question of moral hazard (i.e. signal that owner can get losses back)
- Owners reinvest money in fishery
- Price of poor fishing vessels artificially inflated (adverse selection)
- Question of who should pay? (Industry? NGOs? public?)

The speaker concluded that buybacks are a useful short-term tool, but that they do not address the root of the problem of over-capacity. He also noted that they are very expensive.

9. Regulating fleet capacity – the Norwegian experience - Per Sandberg, Norwegian Fisheries Directorate

The speaker reviewed the Norwegian experience of capacity reduction. Scrapping regimes of one kind or another have existed in Norway since 1960. It has not solved the over-capacity problem, although it may have eased it.

The objectives of the current programme are:
- Fleet size in balance with sustainable yields
- Fleet diversified with inshore and offshore components
- Activity all along the coast
- All elements of the fleet profitable

The instrument being used is the 'structural quota system' (SQS), as well as buybacks (now finished). Under the SQS, when one vessel is scrapped, another vessel can have its quota for 20 years – the idea being that this is the duration of life of the second vessel. For the coastal fleet, the purchasing vessel gets 80% of the quota, with the remaining 20% divided among the rest of the fleet. Since the various fleets have a fixed allocation of the national quota, the fleets that do well with the SQS will get the most benefits accruing to the remaining vessels. The SQS system also incorporates some arrangements to maintain a geographical balance in the fleet, to avoid concentration of quota on factory vessels and single owners and so on.

Evaluation of the SQS programme:
- Forms a significant proportion of the quota for most fleets
- Profitability has increased
- Reduction of 22% in number of fishermen and 32% in vessels
- Value of catch and geographic distribution of landings has not changed

There are however some issues of concern:
- Access to the industry for newcomers is very limited
- There may have been changes in the exploitation pattern of the resource –not yet clear whether these are positive or negative (however this has been minimised by retaining an overall quota allocation by fleet)
- There may be impacts on unregulated species (however if vessels gain more quota this may reduce the pressure on unregulated species)
- Vessels carrying more debt (due to paying for extra structural quota) – this may act as an incentive for illegal activities such as highgrading. The banking system needs to be robust and only grant loans to vessels that can make repayments without illegal activities.

He also highlighted some other important issues:
- This is a step-wise process (where backing up a step is very hard) – very important to evaluate each step
- Consultation with industry is vital
- Important to signal future directions clearly – e.g. if planning to introduce resource rents

A questioner asked whether there were quantitative targets for fleet reductions, and if so whether they were met. The speaker responded that since capacity is so difficult to measure, quantitative targets were not set – the aim was rather to give the industry the opportunity to consolidate if the market dictated that this was the right thing to do. However, he feels that they still have over-capacity.

Another questioner asked whether this conflicted with the project to introduce resource rents – the industry having already paid for their quota for 20 years. He acknowledged this but suggested that it should be introduced gradually and beyond the 20 year timeframe.

10. Restructuring fishing fleets for economic, social and ecological sustainability – an example from the West Coast of the United States - Astrid Scholz, Ecotrust

The speaker focused on the West Pacific groundfish fishery and its strategic plan 'Transition to Sustainability'. This plan set specific quantitative targets for capacity reduction but did not provide a road map as to how to get there. The plan contained the following elements:

- 'Permit stacking' for fixed gear
- Trawl buy-back
- IFQs for the trawl fishery
- Large coastal area closures as part of species rebuilding plans (which have blocked access for some coastal vessels)

In order to find an equitable way of meeting these targets, GIS models have been used to look at the consequences for different fleet segments of different management scenarios – these models looked at economic, social and environmental outcomes.

It is clear from the model results that the design of the restructuring programme has a big impact on the outcomes, which are highly variable between different fleet segments and different coastal communities. These means that managers can in theory choose which segment will bear the most pain in restructuring, or can choose a scenario that divides the pain more or less equally. Thus it is possible to design restructuring programmes to favour certain parts of the fleet over others.

The speaker also considered the quota leasing programme in Alaska and British Columbia, drawing the following conclusions:

- The programme has led to high levels of debt in the industry
- The pattern of crew compensation has changed (crew becoming less partners and more employees) – leading to a reduction in social benefits from the fishery
- There has been quota price inflation – beyond the increased value that vessels were obtaining from improving resource status – i.e. a quota 'bubble'.

Overall, she drew the following conclusions:

- The institutional context matters – especially if there are subsidies available; the legal framework, enforcement and participation in decision-making is also important
- The use of external scientific and technical expertise is often appropriate but not yet widely practiced
- Successful markets need enabling conditions (i.e. good management)
- There is no perfect system – but there are ways of finding the best option for a given situation

Parallel Workshops

Workshop 1 – Rights-based management tools for fleet restructuring and capacity reduction

Questions for discussion:

- Can transferable rights be designed to deliver a socially, economically and environmentally sustainable fleet, and how?
- Are RBM tools adequate for all fisheries and fleet segments?

Points made:

1. Definition of rights

- Can argue that EU fisheries already regulated by 'rights-based management' because closed vessel register – if you want to fish you have to buy a licence.
- However, within that framework, many fisheries are open access (i.e. not limited by quotas), and more generally, capacity has not been limited to reflect fishing opportunities.
- This means that 'rights' have to be more strongly defined than just the right to fish.
- Suggested that rights be defined by fleet segment rather than for fleets as a whole – however this then becomes a question for Member States.
- Note distinction between 'user right' and 'property right' (i.e. do you 'own' the fish or do you own the right to fish?) – stressed that should be user right.
- Can have a wide variety of user rights – on inputs (effort, days at sea), on outputs (quota); can have individual vs. group or community rights. In multi-species fisheries (i.e. most fisheries) individual transferable effort (ITE) has an advantage over ITQs in that it is cheaper and easier to manage such a program and may have fewer discards, but that ITEs are only indirectly related to catches and do not account for all economic inputs, investment, and technical change. The choice of ITQs, ITEs, and group rights need to be accomplished on a case-by-case basis.

2. Allocation of rights

- Allocation of rights removes public access – do they have rights too? – i.e.user rights rather than property rights so the public retains ownership to the fish stock itself.
- Allocation needs to be fair and equitable – an auction system proposed, with some proportion reserved for the small-scale fleet. However, rights often allocated at the moment when a fishery is broke – could be given without cost for some initial period.
- Some safeguards also need to be put in place – e.g. no trading in rights for two years.
- There are specialists in 'market design' – e.g. for the allocation of phone frequencies – these people could be consulted so that an appropriate system is designed.

3. Duration of rights

- Rights should be time-limited – in practice this is not always easy to achieve if rights can be traded. But duration of rights needs careful consideration.
- Threat with limited duration rights is that as the time period comes to an end fishermen have a perverse incentive to 'mine' the resource before they lose their rights.
- However, can build in incentives to avoid this – e.g. if set performance standards (e.g. reduced fuel consumption, limited by-catch, quality of landings etc etc) and make those that meet performance standards a preferred candidate for the next round of rights allocations.
- Example given of Scottish conservation credits in this regard – cleaner fisheries get more days at sea. However, this can only be done if there is central control of the quota rather than individual allocations.
- Could have mixture of short and long duration rights at the same time – don't have to be the same for everyone and every resource.

4. Using rights to reduce capacity

- Note that major differences in the system across the EU – rights-based management operates differently in different Member States. Some MS's already have individual tradable rights, while in others (such as France) you cannot trade rights – they continue to belong to the State. In these MS's you cannot use market mechanisms to reduce capacity. However, if rights belong to the State, the State can (in theory) take them back, reducing capacity by a different mechanism. In Estonia and some other MS's the licence is linked to a particular vessel; if the vessel is scrapped the licence is scrapped with it.
- Generally, however, for rights-based management to reduce capacity they need to be transferable.
- Suggested that to kick start the process you still may need a buy-back scheme.
- Overall, rights-based management should result in capacity reduction in the long-run – but effort-based rights may not deal with technological creep.

5. Getting the type of fleet you want

- Society should decide what kind of fleet they want to end up with
- OR the market should decide?
- OR is this a false trade-off between economics and socio-economics? If the rights-based management trading system is designed properly to start off with, the market should end up providing a fleet that is both economically efficient and socially desirable.
- Could also deal with this question by group rather than individual allocations - also has the benefit that fishermen cooperate to police themselves. While group allocations and rights may be particularly promising for smaller-scale fleets and communities, group allocations are also used with factory trawlers in Alaska.

Conclusions of workshop 1

- We need to look at and redefine the different fleet segments to match the fisheries
- Individual rights should be allocated for limited time but long enough to allow fishers to have a profitable business
- Allocation should be fair and equitable
- One way of allocating could be through auctions – market designers can help define the set-up to ensure social and ecological aspects are taken into account.
- You need transferability to get reduction of capacity – but you might need buy back for the transition.
- Group fishing rights is a tool that helps in taking account of social aspects or when transactions costs and complexity of fishery, prohibit individual rights.
- Fleet restructuring: use rights as incentives for 'good fisheries' (eg Scottish conservation credits).

Workshop 2 –Fleet restructuring and capacity reduction using alternatives to rights-based management

Questions for discussion:

- Is there a need for legally binding fleet reduction and restructuring targets?
- How can targets be set in a science-based and ambitious manner?
- Should targets for changes in fleet structure be set on a fishery-by-fishery basis, on a region-by region, or on a Member State by Member States?
- How to ensure effective implementation?

Points made:

1. General comments and definitions

- In the EU, approximately 40% average overcapacity but this can amount to up to 2 – 3 times above what would be appropriate MSY. However, over-capacity very variable between different fleets – reductions should be targeted.
- Consider the time frame for capacity reduction
- Must not confuse reduction of capacity (tonnes and kW) and reduction of effort (days at sea)

2. Legally-binding fleet reduction and restructuring targets: principle

- General agreement that these were necessary, given the failure of MS's up to now to provide any significant capacity reduction.
- These should not be too detailed – give MS's discretion.
- Need better data on EU fleet and capacity
- Could be under independent control? e.g. some kind of commission.

3. Legally-binding fleet reduction and restructuring targets : difficult issues

- What do we want to end up with? What criteria can we use to decide on what is a sustainable fleet?
- What timeframe for reduction / restructuring?

4. Setting targets

- Targets should be for MS's – but have to consider regional issues.
- Targets cannot be too specific if we cannot measure them – so probably need soft targets rather than hard (i.e. not with specific numbers attached). But then difficult to make targets real if they are subject to interpretation and thus manipulation.
- Technological creep must be factored in, noting that it is variable between MSs.
- Time frame – must be longer than annual
- Need to consider transitional issues – difficult period as stocks recover.
- Targets should be linked to ecological outcomes – e.g. stock status, protected areas etc. However it is difficult to link these outcomes back to specific fleet segments.

5. Implementation

- Buy-in of stakeholders is essential
- Need good data, monitoring and control
- Regionalisation (targets at regional level where possible)
- Make targets legally binding with serious sanctions for non compliance

6. Avoiding negative consequences

- Define subsidies to each fleet
- Allocation of quota needs to be carefully considered
- Criteria for access
- Ring fencing measures to protect specific fisheries, communities, regions, fleets segments etc
- State aid for transition

7. Summary table of tools, their advantages and disadvantages

CAPACITY REDUCTION/ RESTRUCTURING TOOL	ADVANTAGES	DISADVANTAGES
Entry/exit • Buybacks • Scrapping	Can be selective by vessel type or fleet	Costly and some of the money will eventually find its way back into the fleet. Needs control.
Economic incentives • Increase fuel tax • Cut off subsidies	Cheap on face of it (but may not be cheap in the end). Could use revenue to pay for transition support.	Unpopular with fisheries. Likely to cause social problems and unemployment
Ecological Impact Assessment	Reacts to Marine Strategy Framework Directive	Untested
Reverse burden of proof Before getting a license fishermen must prove that their actions are within ecosystem limits.	Implies target end-point for healthy ecosystems	Unrealistic
Providing alternatives Creating desirable alternative employment in fishing communities.	Reduces capacity with lower social impacts	Costly and difficult

Conclusions of Workshop 2

- Capacity reduction does not necessarily mean that fishing mortality will decline – no direct linear relationship.
- Legally binding targets on Member States are necessary, with fines or other serious sanctions for non-compliance.
- Overcapacity is different in different fleet segments – we need better data to measure fishing effort and capacity
- Technological creep must be factored in.
- For effective implementation need buy-in of all stakeholders
- A regional approach in some areas would make a lot of sense
- The workshop did not favour buy-out schemes - too expensive and not always (usually?) effective.

Workshop 3 – What does a sustainable fleet look like?

Questions for discussion:

- What makes up a fleet which meets the sustainability criteria outlined in the morning session?

Points made:

1. General points

- Should we be asking what a sustainable fleet looks like? Perhaps better to ask what sustainable stocks / ecosystems / fishing communities look like and leave it to industry to decide how best to get there.
- Definition of sustainability – 'people, planet, profit' framework – i.e. consider social, environmental and economic sustainability.
- A modelling approach might be useful in defining end points that meet these criteria and in finding 'least painful' pathways to get there.

2. Changes to management system to improve sustainability

- A sustainable fleet will need both short term restructuring and longer term management
- The management system needs to be flexible and adaptable
- There needs to be regulation but ideally it will not introduce inflexibility or inefficiency into the fishery (as far as this is possible)
- Regulation needs to focus on outcomes not inputs – give the industry the flexibility to operate as it wants within the constraints of desirable outcomes (environmental and social)
- Consider the issue of burden of proof
- This approach needs good information - electronic logbooks are a practical tool for helping us along this road
- Having said that, may have to be prescriptive in some areas
- Devolve responsibility to national / local level, particularly for social issues / objectives

3. How to set standards and targets?

- Can set targets in relation to: target stock, wider ecosystem, CO_2 emissions, social and economic indicators
- It was noted that social indicators in particular are hard to define
- Include user groups – otherwise they risk being unrealistic
- Include a timeframe, keep evaluating progress and adapting management
- Good monitoring and control (the workshop noted that the current management system might work better if there were adequate control)
- Targets need to go beyond the EU – end to exporting bad fisheries / bad practices overseas. EU should be world leader.

4. What should the fleet end up looking like?

- Fleet should be profitable without subsidies
- Some gears are obviously preferable to others, however it was decided that managers should avoid dictating technical issues such as gear type. It would be preferable to set environmental targets such that fishermen prefer to use better gears.
- Small-scale coastal fleet should be supported
- Quality of product should be high
- Good data and good compliance

Conclusions of workshop 3

- What makes up a fleet which meets the sustainability criteria outlined in the morning session? – This is not the right question.
- Question is: what do we want the ecosystems to look like? And what benefits do we want to draw for society?
- Suggest management by outcome (we should not dictate what fishermen should do, but what they should deliver).
- Targets must be set (environmental, social, perhaps others?)
- Zero habitat damage
- Negligible discards
- Number of hands on deck
- Minimum quality of product
- etc

Additional considerations:

- General acceptance that there are limits on self- or market regulation – however no agreement about the extent to which politicians / managers / society can dictate to fishermen.
- Some thought that certain fleets / gears should be eliminated, while others that given the variety of fishing techniques in the EU it was dangerous to generalise in this way.
- All user groups (and tax payers?) involved in setting targets.
- Continuous cycle of review and adaptation of management models.
- Effective control and enforcement are key.
- Politics: eg Member States not prepared to cede competencies for social policies. External fleet: should it exist? Unacceptable to export bad environmental practices.

Conference Conclusions

The following conclusions were drawn from the various talks and associated discussion and the workshops:

- Subsidies must go.
- Need to do much better at engaging with fishermen – particularly small-scale fishermen.
- Stop micro-managing fisheries. Set objectives for outcome you want but allow industry more flexibility to operate within that framework (although effective management / control will still be necessary).
- In terms of controlling catches, input (i.e. effort) management is often better than output management (i.e. quotas) – but this will only work when capacity is appropriate to fishing opportunities. But the most appropriate management regime will vary by fishery and depending on the specific situation.
- We need better data on capacity and overcapacity, and better ways of characterising fleets in terms of their sustainability in the broadest sense – i.e. social and environmental as well as economic.
- Rights-based management can be successful in giving the industry more flexibility, but only under the right conditions. It is not by itself a silver bullet to address the problem of over-capacity and may not be the best choice in all circumstances. Markets need to be well designed – preferably by experts and such that they achieve a set of objectives as defined in national or EU law, i.e. not markets for markets sake, but markets to achieve a broader societal purpose. Rights can be individual or group and can be over catch, effort, or area. The choice depends on the circumstances. There are many examples of successes and failures to learn from.
- Legally-binding targets on Member States (for capacity reduction) are also necessary as a supplement to rights-based approaches or to kick-start them.
- Sustainable fisheries need good scientific data, analysis and models (and once we have good models we should not argue with the results) – they also need good information about fishing effort and practices and good monitoring and control.
- Management of fisheries needs to be at the appropriate scale – this may be local, national, regional or European.

Annex 1

Conference Programme

08.30: Coffee & Registration

09.00: Welcome
Herman Verheij
Chairman of Seas At Risk
Monica Verbeek
Executive Director Seas At Risk

09.15: Keynote addresses

Axel Wenblad
Director General of the Swedish Board of Fisheries
Poul Degnbol
Adviser on Scientific Matters DG MARE, European Commission

Setting the scene

10:00: The relation between adjustment of fishing capacity and the MSY management objective
Sidney Holt
Advisor to Global Ocean and Ocean 2012

10.30 Coffee break

What makes a fleet sustainable?

11.00: Environmental aspects of fishing: finding the balance between exploiting marine resources and respect for nature
Hans Polet
Flemish Institute for Agricultural and Fisheries Research (ILVO)

11.30: Fishing for the future; social and societal aspects of sustainable fisheries
Marloes Kraan
Dutch Fish Product Board

12.00: Economics for sustainable fisheries
Aniol Esteban
new economics foundation

12.30: Lunch

Capacity reduction and fleet restructuring

13.30: Overview of European fishing fleet capacity management
Sophie des Clers
Geography Department, University College London

14.00: Lessons from fisheries buybacks
Dale Squires
USA National Oceanic and Atmospheric Administration

14.30: Regulating fleet capacity – the Norwegian experience
Per Sandberg
Norwegian Fisheries Directorate

15.00: Restructuring fishing fleets for economic, social and ecological sustainability – an example from the West Coast of the United States
Astrid Scholz
Ecotrust

15.30: Coffee break

Parallel workshops

16.00: Parallel workshops on management tools to achieve a sustainable fleet.

17.15: Reports from the workshops and conclusions

18.00: Conference ends

Annex 2

Participant List

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